Maryland Transportation Authority

SECTION 100

Purpose and Need Statement

I-95, I-895 (N) Split to North of MD 43

John F. Kennedy Memorial Highway

JFK 100 SECTION

September 16, 2003

Section 100: I-95, I-895(N) Split to North of MD 43

TABLE OF CONTENTS

Section 100: I-95, I-895(N) Split to North of MD 43

The proposed action involves improvements to I-95, from I-895(N) Split to North of MD 43, in Baltimore County, Maryland. For project planning purposes, this portion of I-95 will be referred to as "Section 100." As defined in the I-95 Master Plan, the Section 100 northern terminus is in the vicinity of New Forge Road, approximately 2.7 miles north of MD 43.

PURPOSE

The purpose of the proposed action is to address capacity and safety needs on Section 100 and thereby improve access, mobility, and safety for local, regional, and inter-regional traffic, including passenger, freight, and transit vehicles.

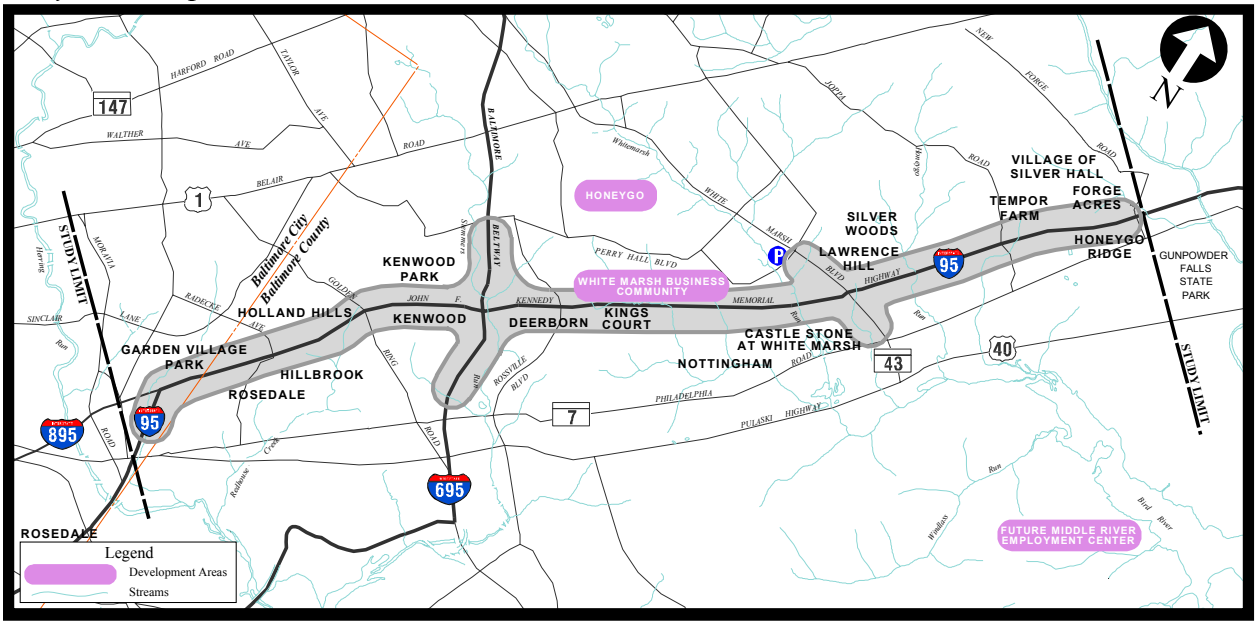
NEED

The proposed action is intended to address the following capacity and safety needs on Section 100:

Capacity - Section 100 is the most congested section of I-95 in Maryland north of Baltimore City. Currently, Section 100, south of MD 43, operates at Level of Service F during the morning and evening rush hours. If capacity needs are not addressed, congestion is expected to increase by the planning horizon year of 2025. By 2025, Section 100, south of MD 43, is also expected to operate at Levels of Service E and F during weekend peak periods. Unchecked, increased congestion levels will extend the existing peak hour into a peak period of several hours duration and increase the level of diversion to alternative routes, such as the community-oriented arterials US 1, US 40, and MD 7.

Safety -The accident rate on Section 100 currently is lower than the statewide average for comparable urban interstates within Maryland. However, the total number of accidents on Section 100 is increasing, especially in the vicinity of the urban I-895, I-695, and MD 43 interchanges, where large volumes of merging, diverging, and weaving movements occur. At some locations, left-hand exit and entrance treatments, limited auxiliary lane lengths and restricted sight distances may increase the potential for accidents to occur. The majority of the reported accidents in Section 100 are of the types normally identified as congestion-related, such as rear-end and sideswipe. If the anticipated congestion levels in Section 100 are not addressed, an increase in the number and severity of congestion-related accidents would likely occur.

Figure 1
Study Area Map



APPENDIX

The information contained in this appendix is being circulated in support of the Purpose and Need Statement for Section 100. This information is the most current available at this time. It is subject to revision, as appropriate, during the project planning study process.

Section 100: I-95, I-895(N) Split to North of MD 43

LOCATION

The study area for Section 100: I-95, I-895(N) Split to North of MD 43, is located in Baltimore County, Maryland, and includes the I-895(N), I-695, and MD 43 interchanges. Figure 1: Study Area Map, illustrates the study area in the context of the surrounding geographic region and transportation network.

BACKGROUND

I-95 is the backbone of the East Coast's highway infrastructure, serving Florida to Maine regional traffic, while at the same time serving as an arterial for local commuter traffic within each state. Within Maryland, I-95 provides access to two passenger rail systems (MARC commuter rail and Amtrak), three freight railroad systems (Amtrak, CSX, and Norfolk-Southern), two airports (Baltimore/Washington International Airport and Martin State Airport), and the Port of Baltimore. The proximity of I-95 to numerous intermodal terminals and urban centers ensures a growing travel demand generated by both local economic development and the transportation needs of the one-quarter of the United State's population that resides on the East Coast.

I-95, from the I-895(N) split to MD 43, was opened to traffic in 1963. I-95, from I-695 to the north, was opened by President John F. Kennedy on November 16, 1963; as the Northeastern Expressway. In President Kennedy's honor, Maryland renamed the Northeastern Expressway as the John F. Kennedy Memorial Highway in 1964.

Upon its opening in 1963, I-95 consisted of three lanes in each direction between I-895 and MD 43. There were two lanes in each direction when the section of I-95 north of MD 43 opened in 1963. The interchange at I-695 and a partial interchange at MD 43 were constructed under independent contracts during the same time frame as the Northeastern Expressway. In 1972, a third lane was added in each direction from MD 43 to the north and the I-95/I-895 interchange was constructed. In the mid-seventies, the remaining ramps at the MD 43 interchange were completed. On January 30, 1991, ownership of the six-mile section of I-95, from I-895 to MD 43, was transferred to the Maryland Transportation Authority by an inter-agency agreement. In Spring 1993, I-95, from I-695 to MD 43 was widened to four lanes in each direction. The fourth lane was extended from MD 43 to the north in Spring 1994.

The Section 100 study area is situated just north of many of Baltimore City's industrial and commercial centers. The northern boundary of the study area coincides with the Baltimore County Urban Rural Demarcation Line (URDL). The urban area, south of the URDL, is the focus for planned new and infill development activity.

TRAVEL DEMAND FORECASTING

The evaluation of alternatives during the project planning study will be based on travel demand forecasts developed using the approved Baltimore Regional Transportation Board (BRTB) travel demand model. Model inputs include socio-economic, roadway network and transit network data.

Socio-economic data, such as projected changes in population, households and employment, are taken from regional forecasts developed by the BRTB metropolitan planning organization with the assistance of local jurisdictions. A planned development within the Section 100 study area is the White Marsh Business Center. This is included in the model's socio-economic data at a level of employees anticipated by the design year.

Section 100: I-95, I-895(N) Split to North of MD 43

The roadway network in the model is in accordance with the latest approved constrained long-range plan (CLRP). Within the Section 100 study area, some assumed improvements include the widening of I-695 from 6 to 8 lanes between I-95 and I-83 and the extension of MD 43 to MD 150 as a 4-lane roadway.

The transit network, as approved by the BRTB, includes express bus service from Bel Air to White Marsh, Hunt Valley, Towson and eastern Baltimore County along Maryland 43 extended. Bus service is also assumed to operate from White Marsh to Harford County and a circulation bus service in White Marsh area. Light rail from White Marsh to Baltimore City is also part of transit network assumptions for the future year model.

TRAVEL DEMAND/LEVEL OF SERVICE (LOS)

The highest weekday and weekend peak period volumes occur between the I-695 and MD 43 interchanges (see Table 1). Weekday peak hour volumes are currently at or near capacity. South of I-695, weekday peak hour traffic volumes exceed weekend peak hour volumes by as much as 2,775 vehicles per hour (48 percent). By 2020, Average Daily Traffic (ADT) volumes are expected to increase by as much as 39 percent. Weekday peak hour travel demand will continue to exceed weekend peak period demand, even though weekend peak period travel is projected to increase at a higher rate.

Table 1
Existing and Future Traffic Volumes

Limits	2002 Volume	2020 Volume [3,4]	Percent Growth	2002 Volume	2020 Volume [3,4]	Percent Growth
	Average Daily Traffic (Vehicles/Day)			Weekend [2] (Vehicles/Hour)		
South of I-895(N)	101,000	140,000	39%	3,600	5,400	50%
I-895(N) – I-695	161,000	220,000	37%	5,800	8,300	43%
I-695 – MD 43	166,000	231,000	39%	6,650	9,050	36%
North of MD 43	161,000	224,400	39%	6,150	8,700	41%
	AM Peak [1] (Vehicles/Hour)			PM Peak [1] (Vehicles/Hour)		
South of I-895(N)	5,200	6,150	18%	5,075	6,225	23%
I-895(N) – I-695	8,550	9,950	16%	8,575	9,975	16%
I-695 – MD 43	7,850	10,000	27%	8,650	10,200	18%
North of MD 43	7,700	9,825	27%	7,950	10,050	26%

Source: Year 2002 volumes from various Maryland State Highway Administration/Maryland Transportation Authority traffic counts. Year 2020 volumes developed from the Baltimore Metropolitan Council Regional Travel Demand Model, Round 5B.

[1] AM and PM peak hour volumes represent the highest hourly volumes in the peak direction that occur on an average weekday (Monday though Friday).

[2] Weekend peak period volumes represent approximately the 50th highest weekend hour that occurs in a calendar year.

[3] Future volumes (design year 2025) currently are being developed.

[4] The 2020 volumes assume improvements to MD 43, I-695, and expanded transit service as shown in the constrained long range plan.

Section 100: I-95, I-895(N) Split to North of MD 43

Table 2

Existing and Future Levels of Service (LOS)[5]

Limits	I-895 to I-695		I-695 to MD 43		North of MD 43	
	2002	2020 [3,4]	2002	2020 [3,4]	2002	2020 [3,4]
	Northbound					
AM Peak [1]	LOS A-C	LOS A-C	LOS A-C	LOS D	LOS A-C	LOS D
PM Peak [1]	LOS F	LOS F	LOS F	LOS F	LOS E	LOS F
Weekend [2]	LOS A-C	LOS E	LOS D	LOS F	LOS A-C	LOS E
	Southbound					
AM Peak [1]	LOS F	LOS F	LOS E	LOS F	LOS E	LOS F
PM Peak [1]	LOS A-C	LOS D	LOS A-C	LOS E	LOS A-C	LOS E
Weekend [2]	LOS A-C	LOS E	LOS A-C	LOS E	LOS A-C	LOS E

Source: Year 2002 volumes from various Maryland State Highway Administration/Maryland Transportation Authority traffic counts. Year 2020 volumes developed from the Baltimore Metropolitan Council Regional Travel Demand Model, Round 5B.

[1] AM and PM peak hour volumes represent the highest hourly volumes in the peak direction that occur on an average weekday (Monday though Friday).

[2] Weekend peak period volumes represent approximately the 50th highest weekend hour that occurs in a calendar year.

[3] Future volumes (design year 2025) currently are being developed.

[4] The 2020 volumes assume improvements to MD 43, I-695, and expanded transit service as shown in the constrained long range plan.

[5] LOS A-C describes varying degrees of operation at or above posted speed limits. At LOS D, speeds decline slightly. LOS E describes operations at capacity, with little room to maneuver in the traffic stream. LOS F describes breakdowns in vehicular flow (Source: *2000 Highway Capacity Manual*).

The highest levels of congestion in the AM peak hour occur along southbound I-95, whereas the highest congestion levels in the PM peak hour occur along northbound I-95 (see Table 2). By 2020, congestion is expected to spread further north in both the AM and PM peak directions, with both operating at LOS F.

North of I-895, weekend peak period traffic currently operates at LOS D or better. Without improvements, the predicted LOS for 2020 weekend peak period traffic throughout the study area is an undesirable LOS E, with the exception of the portion of northbound I-95 between I-695 and MD 43, which is predicted to be LOS F, as shown in Table 2 .

SAFETY

The Maryland State Highway Administration, Office of Traffic and Safety (SHA-OOTS) provided police-reported accident data for the 8.7-mile study area for the three-year period from 1999 to 2001. During that period, a total of 724 accidents were reported in the study area, including three fatal accidents, 272 injury accidents, and 449 property-damage-only accidents. The total number of accidents increased 9.4 percent during the three-year period, from 244 in 1999 to 267 in 2001.

The percentage of heavy vehicles on Section 100 is approximately 10 to 15 percent of the overall traffic volume, whereas the Maryland statewide average heavy vehicle percentage for urban interstates is six to 10 percent. Overall, 169 of the 724 reported accidents involved a heavy vehicle, which was 11.2 truck-related accidents per 100 million vehicle miles traveled (MVMT). This rate is 30 percent greater than the 8.6 truck-related accidents per 100 MVMT statewide average for similar Maryland urban interstates.

Section 100: I-95, I-895(N) Split to North of MD 43

Table 3 summarizes reported accidents within the study area, by accident type and location within the study area. More than 60 percent of the reported accidents in Section 100 are of the types normally identified as congestion related, such as rear end or sideswipe. The calculated study accident rate shown in Table 3, 48.0 accidents per 100 MVMT was 8.7 percent below the average rate of 52.6 accidents per 100 MVMT for similar Maryland maintained interstates. (Study rates were found by dividing the specific number of accidents by the 100 MVMT provided by SHA-OOTS.)

Most of the study area accident rates shown in Table 3 were comparable to their respective statewide average rates, with the exception of accidents categorized as "other." These accidents include those not directly applicable to other categories (such as u-turn accidents, backing accidents or animal related accidents) and accident types not indicated on accident reports. Based on the information available, it is not immediately clear why the rate of "other" accidents shown for the study area (7.5 accidents per 100 MVMT) was 75 percent greater than the statewide average rate of 4.3 accidents per 100 MVMT.

During the three-year study period, 13 sections of I-95 throughout the study area were identified as secondary Candidate Safety Improvement Locations (CSILs). CSILs are one-half mile long segments of roadway that have 10 or more accidents. They are classified as priority or secondary depending on how much greater the segment's accident rate is as compared to other Maryland highways with similar design characteristics. As shown in Figure 2, the 13 sections were concentrated primarily within the I-695 and MD 43 interchanges. The CSILs are likely concentrated in the

Table 3

Accident Data Summary (1999-2001)

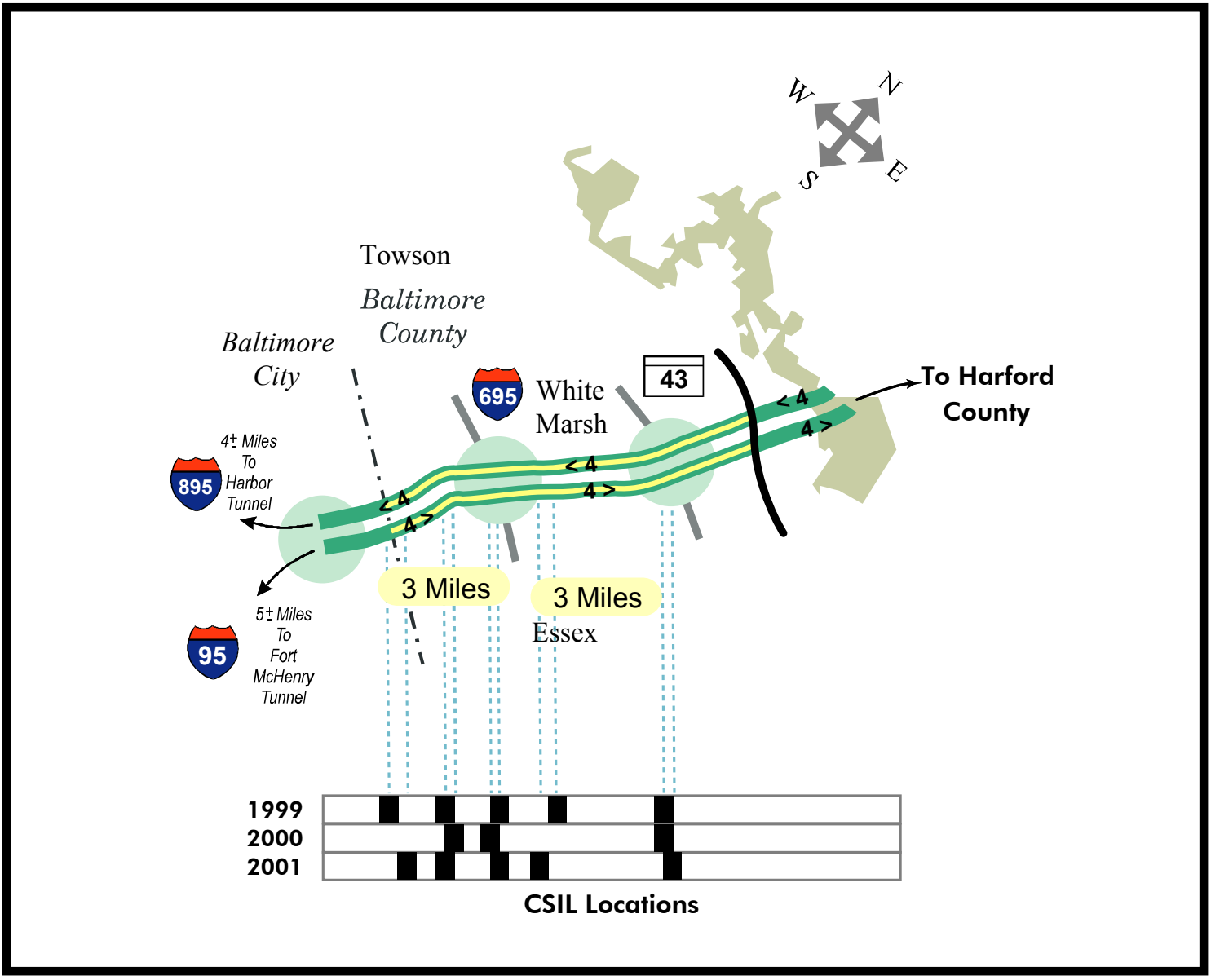
		Mainline Sections				Interchanges		Totals	Study Rate [1]	Statewide Rate [2]
		I-895(N) to I-695	I-695 to MD 43	North of MD 43	Subtotal	I-695	MD 43			
Mileage		**2.36**	**2.55**	**2.43**	**7.34**	**0.75**	**0.63**	**8.72**		
Accident Type	Rear End	121	64	50	235	50	29	314	20.8	20.7
	Fixed Object	34	44	22	100	27	25	152	10.1	14
	Sideswipe	35	29	20	84	27	10	121	8	7
	Parked	12	4	2	18	2	0	20	1.3	1.3
	Pedestrian	0	1	1	2	0	0	2	0.1	0.3
	Opposite Direction	0	0	1	1	0	1	2	0.1	0.3
	Other	31	28	19	78	17	18	113	7.5	4.3
Total		**233**	**170**	**115**	**518**	**123**	**83**	**724**	**47.9**	**52.6**
Severity	Fatal	1	0	2	3	0	0	3	0.2	0.4
	Injury	92	69	38	199	49	24	272	18	22
	Property Damage Only	140	101	75	316	74	59	449	29.8	30.2
Condition	Nighttime	78	57	31	166	42	20	228	32%	32%
	Wet Surface	33	46	19	98	29	21	148	21%	28%
	Alcohol	20	12	12	44	5	8	57	8%	8%

[1] Study rates are in 100 MVMT and are calculated by dividing the number of accidents by vehicle miles traveled provided by SHA-OOTS.

[2] Statewide rates are in 100 MVMT and are average rates for similar Maryland maintained interstates.

Section 100: I-95, I-895(N) Split to North of MD 43

Figure 2
Candidate Safety Improvement Locations (CSIL), 1999-2001



CSILs are half-mile roadway sections that have 10 or more accidents per mile.

P - Priority sections are those areas where the accident rate significantly exceeds the statewide average rate for similar facilities.

■ - Secondary CSILs are those areas where the accident rate exceeds the statewide average rate for similar facilities.

Source: Maryland State Highway Administration, Office of Traffic and Safety

interchange areas because of the merging, diverging and weaving movements that occur there. At some locations, left-hand exit and entrance treatments, limited auxiliary lane lengths and restricted sight distances may increase the potential for accidents to occur. These factors, in combination with the overall congestion in Section 100, contribute to the CSILs.

LAND USE/ECONOMIC DEVELOPMENT

I-95 is a major transportation facility that influences inter- and intra-regional road transportation within Baltimore County. I-95 also provides access to local and regional inter-modal terminals, including the Port of Baltimore.

Changes to State and County land-development policies and plans will influence strongly the pace and location of growth along the corridor. Maryland's 1997 Smart Growth and Neighborhood Conservation Act (Smart Growth Act) directs state infrastructure funds to areas within or connecting county-designated and state-certified Priority Funding Areas (PFAs) (See Figure 3). The study area is located within a county-designated and state-certified PFA.

Land use immediately south of the study area, within Baltimore City, is primarily industrial with some residential. The I-95/I-895 (N) split occurs just south of the Baltimore City/Baltimore County line. Within Baltimore City, I-95 and I-895 serve the Canton Industrial Area, Port of Baltimore, and Fort Holabird Industrial Park before continuing south through the Fort McHenry Tunnel and Baltimore Harbor Tunnel, respectively.

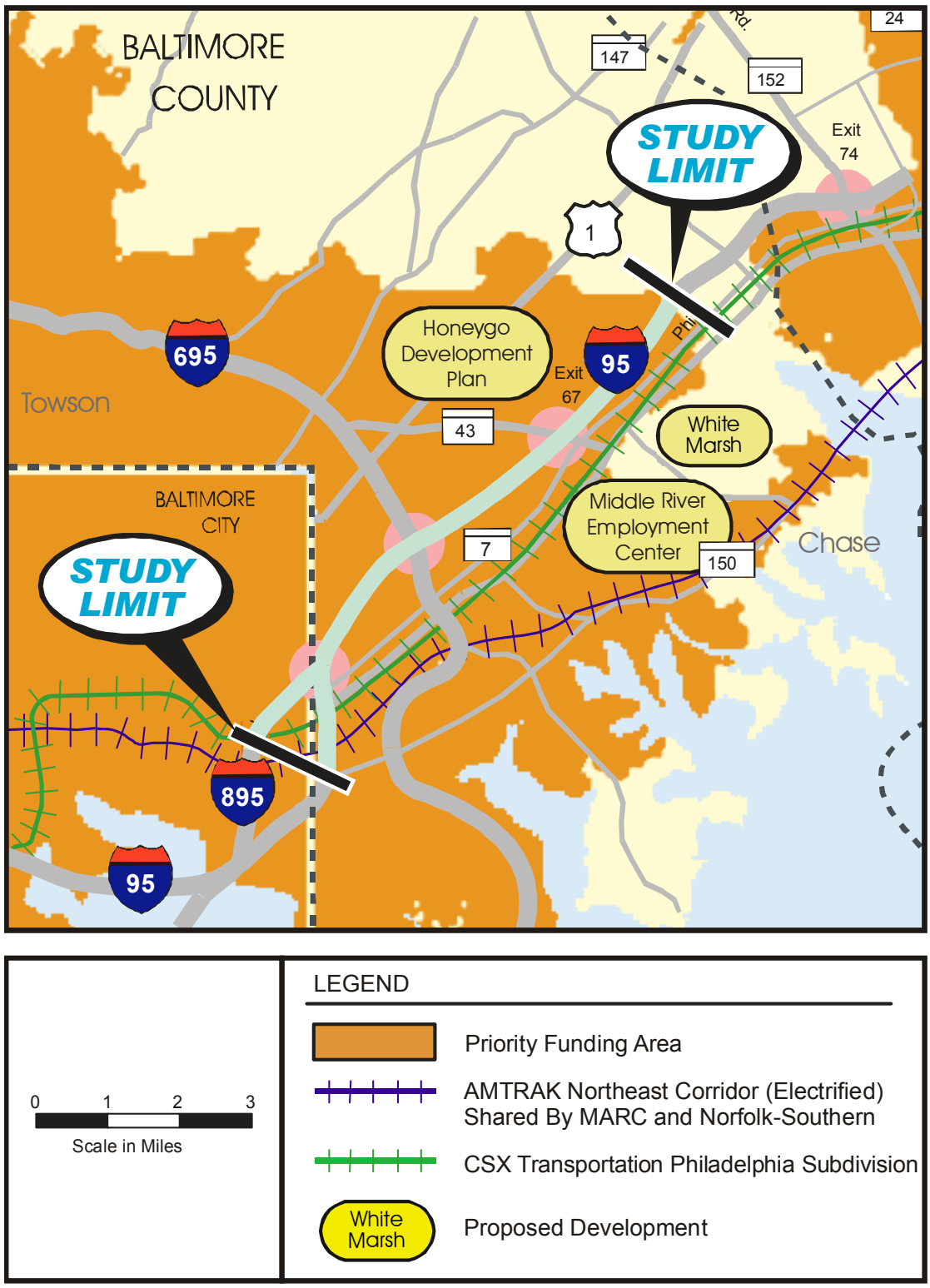
Baltimore County has a 30-year history of considering growth management in its general plan. A key component of its growth control efforts is the designation of urban and rural zones, denoted by the Urban-Rural Demarcation Line (URDL). Within the urban section (where 90 percent of the county population resides), emphasis is placed upon economic development, public safety, education, and community conservation.

The study area falls completely within the urban area of Baltimore County, south of the URDL. The land-management areas within the urban section include community conservation areas (CCAs), growth areas, employment areas, and the Towson Urban Center. CCAs within the URDL, near I-95, contain established residential communities and industrial/commercial developments.

The White Marsh Town Center, adjacent to the MD 43 interchange, includes dense commercial, business, residential and institutional uses on both the east and west sides of I-95. Other major private developments that are planned near the study area are the Middle River Employment Center (MREC) and the Honeygo development. The MREC site is located southeast of MD 43, predominantly on the south side of I-95. The planned MREC is expected to attract approximately 10,000 to 15,000 new jobs to the region. The MREC includes a 1,000 acre undeveloped parcel, Martin State Airport and the Chesapeake Industrial Park, which includes Lockheed Martin Aerostructures/General Electric (LMA/GE) facilities. The MREC site is currently served by Amtrak. The MREC site will also be accessible from the MD 43 extended roadway, which is under construction.

Northwest of the I-95/MD 43 interchange is the Honeygo development plan, a consortium of multiple private-development projects in the White Marsh area. Development projections for the Honeygo area call for 3,500 to 5,600 residential units, with buildout expected to occur by 2025 (some of the units are already in place). Also in the study area is the Baltimore Air Park, which is being redeveloped with residential land use. The projected demands upon I-95 from these developments are included in the 2020 projected traffic volumes shown in Table 1.

Figure 3
Priority Funding Areas and Proposed Development



Section 100: I-95, I-895(N) Split to North of MD 43

OTHER TRANSPORTATION PROJECTS

A number of on-going or recently completed studies and projects have focused on various transportation improvement within or around the study area. Projects and studies include:

- **Intelligent Transportation Systems (ITS) Improvements –** Installation of incident-detection cameras, weather sensors, dynamic message signs and other equipment to monitor and manage highway operations. Variety of Maryland State Highway Administration (SHA) and Maryland Transportation Authority (Authority) projects.

- **Electronic Toll Collection –** E-Z Pass ^{SM} system installed at all Authority facilities as of October 2001.

- **Commercial Vehicle Information Systems and Networks (CVISN) -** This program involves a collection of state, federal and private sector information systems and communications networks that support commercial vehicle safety inspection programs. To improve the effectiveness and efficiency of motor-carrier safety enforcement, the Maryland Department of Transportation (MDOT), Maryland Transportation Authority and Federal Motor Carrier Safety Administration unveiled Maryland's Electronic-Screening Pilot Program in 2001 at the Authority's I-95 Commercial Vehicle Weigh Station and Inspection Complex.

- **Maryland Comprehensive Transit Plan (MCTP)** – Maryland Transit Administration (MTA) statewide study to provide a framework for long-term development of a comprehensive transit system throughout the state published in June 2001.

- **Maryland Congestion Management Study (CMS)** – The CMS provides a systematic, high-level analysis of causes and solutions to traffic-congestion and mobility needs in 28 transportation corridors in Maryland, including the JFK study area. Baltimore Regional Transportation Board (BRTB) adopted in February 1999.

- **Baltimore Region Rail System Plan** – MTA regional study of potential new high capacity transit corridors, adopted Fall 2002.

- **Green Line Corridor Transit Study** – MTA project planning study of the Baltimore Region Rail System Plan for a portion of the Baltimore Region Rail System Plan Green Line. The Green Line includes an extension of the Johns Hopkins Hospital Metro Station to a new terminus at Morgan State University, an extension to White Marsh, an I-95 intermodal station and a Martin State Airport station. Project planning/DEIS for the Green Line from Hopkins Hospital to Morgan State University was initiated with the formal scoping meeting in June 2003.

- **Red Line Corridor Transit Study** – MTA project planning study of the Baltimore Region Rail System Plan Red Line. The Red Line will consider new rapid transit service from the Social Security/Woodlawn area in western Baltimore County to Fells Point/Patterson Park in Southeast Baltimore. MTA will consider Light Rail and Bus Rapid Transit for the Red Line. This project is currently in the scoping phase.

- **Analysis of Commercial Vehicle Parking Supply and Demand –** Federal Highway Administration study to evaluate truck parking supply and demand in each state, completed in 2002.

- **I-695, from I-83 to I-95 –** Series of SHA projects to improve I-695, from I-83 to I-95, including the York Road interchange (currently under construction) and the Dulaney Valley Road interchange (completed).

Section 100: I-95, I-895(N) Split to North of MD 43

- **MD 43 Extended –** SHA project to construct a limited-access highway between MD 150 and US 40. The Design Process is continuing. Construction will begin Summer 2003.

- **MD 7 Widening** – SHA project to widen MD 7 from MD 43 to Campbell Boulevard, completed in Spring 2003.

- **The Mid-Atlantic Rail Operations Study** – A working group of the Freight & Passenger Subcommittee of the I-95 Coalition Intermodal Track. The group, comprised of representatives from Amtrak, Norfolk-Southern and CSX as well as state departments of transportation from Delaware, Maryland, New Jersey, Pennsylvania and Virginia identified major rail, freight, and passenger bottlenecks through the north-south corridors of I-81 and I-95. Study completed April 2002 .

- **Maryland Freight Movement Study** – MDOT study that considers the needs of the State's freight transport network in systematic terms. Its objectives are to define Maryland's role in regional, national, and global freight movement, evaluate the existing freight distribution network, identify initiatives and prepare an action plan (completed September 2001).

- **US 1, Belair Road** – SHA planning study to reconstruct US 1 from MD 43 to MD 152 (8.46 miles). This improvement would relieve congestion and improve safety and traffic operations on US 1 and provide capacity for planned residential and commercial development along US 1. Currently environmental updates are underway, however, no funding has been allocated to complete the design or acquire additional right-of-way.

- **US 40 (Pulaski Highway)/Golden Ring Road** – SHA project to provide intersection safety improvements, completed.

- **MD 7/Cowenton Avenue/Ebenezer Road** – SHA project to provide left turn lanes and signalization, completed.

- **MD 43/Honeygo Boulevard** – Joint SHA/Nottingham Development intersection improvement project to lengthen left turn lanes and provide aesthetic treatments, completed Spring 2002.

- **Campbell Boulevard - MD 7 to MD 43 Extended** – Baltimore County project to construct a new roadway between MD 7 and MD 43 extended, currently under design.

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